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REMARKS

Claims 1-37 are all the claims presently pending in the application. Claims 7 and 19 are amended merely to obviate the claim objections based on informalities, as set forth below. Claims 15 and 36 are amended merely to proper antecedent basis for the claim terms.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability.

Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicants thank the Examiner for indicating that claims 26-29 are allowed.

Applicants further thank the Examiner for indicating that claims 2-9, 14, 16-24, and 31-35 would be allowable if rewritten in independent form.

Claims 15, 26, and 37 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1, 10, 12, 13, and 25 stand rejected on prior art grounds under 35 U.S.C. § 102(b) as being anticipated by Goode (U.S. Patent No. 3,251,034) and claims 1, 10, 11, 13, and 25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Magnin (U.S. Patent No. 3,261,00). Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Goode in view of Post (U.S. Patent N. 6,249,319).

These rejections are respectfully traversed in the following discussion.

I.   THE CLAIMED INVENTION

The present invention relates to a method and system for synchronization in the presence of thermal asperity.

In the illustrative, non-limiting embodiment of the invention defined by independent claim1, a method of finding byte synchronization appends a synchronization symbol to random data.

In another exemplary embodiment of the invention defined by independent claim 13, a system for finding byte synchronization, includes a synchronization symbol and a unit for

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appending the synchronization symbol to random data.

In another exemplary embodiment of the invention defined by independent claim 25, an encoder for finding byte synchronization, includes a synchronization symbol and a unit for appending the synchronization symbol to random data.

In another exemplary embodiment of the invention defined by independent claim 26, a format for a contiguous data block of a disk drive, a controllably positionable head for storing user data in the data block, and a read channel responsive to the head for retrieving the user data from the data block, the data block format including a bit-sync field having a first sync pattern for synchronizing the read channel to enable the read channel to recover the user data from the data block and a random data field proximate the bit-sync field.

In another exemplary embodiment of the invention defined by independent claim 29, a format for a contiguous data block of a disk drive, a controllably positionable head for storing user data in the data block, and a read channel responsive to the head for retrieving the user data from the data block, the data block format including a sync field having a first sync pattern for synchronizing the read channel to enable the read channel to recover the user data from the data block, a first byte-sync field adjacent the sync field, a second byte-sync field proximate the first byte-sync field, and a random data field interposed between the first and second byte-sync fields.

In another exemplary embodiment of the invention defined by independent claim 30, a signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of finding synchronization, including appending a synchronization symbol to random data.

Conventional disk drive systems utilize dual synchronization fields for each data header. By utilizing two sync fields, as apposed to one, catastrophic failures can be mitigated. However, the conventional systems are problematic because they take up valuable space in the stream which otherwise could be used for the data, thereby limiting the amount of data that can be written to the disk.

The present invention, on the other hand, provides an alternative to dual sync, by eliminating a second VFO field Sync 2 and replacing it with data (e.g., see specification at page 9, lines 11-13).

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II.   ALLOWABLE SUBJECT MATTER

Claims 26-29 are <u>allowed</u>.

Claims 2-9, 14, 16-24, and 31-35 would be <u>allowable</u> if rewritten in independent form.

Applicants submit that claims 2-9, 14, 16-24, and 31-35 are <u>allowable</u> in their present form at least by virtue of their dependencies from independent claims 1, 13, and 30, respectively. Applicants reserve the right to rewrite these claims in independent form at a later time.

III.   CLAIM REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 15, 36, and 37 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 15 and 36 are amended to depend properly from <u>allowable</u> claims 14 and 34, respectively, thereby providing proper antecedent basis for the claim terms.

Applicants submit that claims 15, 36, and 37 are clear and definite, and therefore, that claims 15, 36, and 37 also should be <u>allowable</u>.

IV.   CLAIM REJECTIONS BASED ON PRIOR ART GROUNDS

A.   <u>Claims 1, 10, 12, 13, and 25</u> stand rejected under 35 U.S.C. § 102(b) as being anticipated by Goode (U.S. Patent No. 3,251,034). Applicants respectfully disagree with the Examiner's position for several reasons, and therefore, respectfully traverse this rejection.

Independent claim 1 recites, *inter alia*, "[a] method of finding byte synchronization by appending a synchronization symbol to random data."

Independent claim 13 recites "[a] system for finding byte synchronization, comprising: a synchronization symbol; and a unit for appending said synchronization symbol to random data."

Independent claim 25 recites "[a]n encoder for finding byte synchronization, comprising: a synchronization symbol; and a unit for appending said synchronization symbol to random data."

The Office Action alleges that:

> *Goode et al. teaches apparatus and method for appending a*
> *synchronization signal (or symbol) to random data*
> *("synchronizing signals or codes be prefixed to or interposed*

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> *between coded messages" Col. 1, lines 32-33)..., if synchronization*
> *codes are interposed between coded messages, then coded*
> *messages (i.e., random data) can also be said to be interposed*
> *between synchronization codes, since Goode et al. deals with*
> *"regularly recurring synchronization codes" (Col. 2, lines 42-43)*
> *the first and second sync fields would have substantiallly identical*
> *patterns.*

(See Office Action at page 3).

Applicants respectfully disagree with this position for several reasons.

Goode discloses a synchronization scheme for time-division multiplex pulse code modulation (PCM) systems. Goode provides synchronization methods for words within a frame and for frames themselves.

On the other hand, in the magnetic recording environment of the present invention, synchronization for every word is not necessarily provided and words are not necessarily grouped in frames. The present application may achieve synchronization before a large sector of data by optimizing the Hamming distance.

Contrary to the present invention, Goode does not provide any means or apparatus for obtaining the reliable synchronization needed in magnetic recording. Thus, Applicants respectfully submit that Goode does not anticipate the claimed invention, but instead, is a synchronization scheme for <u>a different application</u> and uses <u>a very different technique</u> that is <u>insufficient for achieving synchronization in modern magnetic recording</u>.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1, 13, and 25 would not have been obvious over Goode. Accordingly, Applicants request that the Examiner withdraw the rejection of claims 1, 10, 12, 13, and 25 and permit these claims to pass to allowance.

B.   <u>Claims 1, 10, 11, 13, and 25</u> stand rejected under 35 U.S.C. § 102(b) as being anticipated by Magnin (U.S. Patent No. 3,261,00). Applicants respectfully disagree with the Examiner's position for several reasons, and therefore, respectfully traverse this rejection.

For at least reasons similar to those set forth above with respect to Goode, Magnin also does not anticipate the claimed invention.

Magnin relates to PCM systems, which are <u>very different from modern magnetic</u>

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recording technology, which involves partial response signaling.

Moreover, as the Examiner points out, Magnin uses the synchronization patterns 110 and 001. However, Applicants respectfully submit that it would not be possible to synchronize based on these two patterns because they do not produce the required Hamming distance. Thus, Magnin clearly is different and does not anticipate the claimed invention.

For at least the foregoing reasons, Applicants respectfully submit that independent claims 1, 13, and 25 would not have been obvious over Magnin. Accordingly, Applicants request that the Examiner withdraw the rejection of claims 1, 10, 11, 13, and 25 and permit these claims to pass to allowance.

C.   Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatantable over Goode in view of Post (U.S. Patent N. 6,249,319).

The Post reference was filed on March 30, 1998 (which is prior to the present application's filing date of May 7, 2001) and issued as a U.S. Patent on June 19, 2001 (which is after the present application's filing date of May 7, 2001), and therefore, is available as prior art only under 35 U.S.C. § 102(e).

The Post reference also was commonly owned by International Business Machines Corporation at the time of the present invention, and therefore, can be removed as prior art under 35 U.S.C. § 103(c).

Thus, Applicants respectfully submit that the rejection of claim 30 should be withdrawn and that claim 30 is in condition for immediate allowance.

III.   **FORMAL MATTERS AND CONCLUSION**

Minor errors have been corrected in the disclosure.

Applicants thank the Examiner for considering the Information Disclosure Statement filed on May 7, 2001.

The Office Action objects to the drawings. Five (5) sheets of Formal Drawings are submitted herewith. Applicants request that the Examiner acknowledge receipt of, and acceptance of, the replacement drawings.

Figure 1 is amended merely to include the designation "Prior Art", as suggested by the

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Examiner.

Figure 3 already includes the designation "Prior Art". Formal Drawings are submitted so that this designation is reproducable.

With respect to Figure 7, Applicants respectfully disagree with the Examiner's position that Figure 7 is prior art. The specification clearly sets forth that Figure 7 illustrates a signal bearing medium 700 for storing steps of a program of a method according to the present invention (e.g., see specification at page 7, lines 7-8 and page 14, lines 9-11). That is, the magnetic data storage diskette 700 depicted in Figure 7 and correspondingly described in the specification relates to an illustrative, non-limiting embodiment of the invention, and is not prior art to the present application.

The Office Action objects to the Abstract of the Disclosure and the Specification because of informalities. The Abstract and the Specification are amended herewith to obviate these objections. The Examiner respectfully is requested to withdraw these objections.

Claims 7 and 19 are objected to because of informalities. Claims 7 and 19 are amended as suggested by the Examiner merely to correct the informalities. Applicants respectfully request that the Examiner withdraw this objection.

In view of the foregoing, Applicant submits that claims 1-37, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.
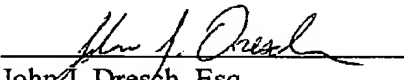
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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any
overpayment in fees to Assignee's Deposit Account No. 09-0441.

Respectfully Submitted,

Date: _March 12, 2004_

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CERTIFICATE OF FACSIMILE TRANSMISSION

I certify that I transmitted via facsimile to (703) 872-9306 the enclosed Amendment
under 37 C.F.R. § 1.111 to Examiner R. Stephen Dildine, Jr. on March 12, 2004.

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